

PRESSURIZED GAS COUPLING

CLAIMS

I claim:

1. A method for producing a valve holder assembly for an automatic gas shutoff valve in a pressurized gas coupling, wherein the valve holder assembly includes a compressible annular gasket mounted on an elongated formable metal valve holder, the method comprising:

providing a valve holder that includes an enlarged flange and a cylindrical portion extending inwardly therefrom;

providing a compressible gasket that fits closely over the cylindrical portion;

mounting the gasket on the cylindrical portion, with an outer side abutting the enlarged flange;

fitting a retaining washer over the cylindrical portion into a position adjacent to an outer side of the gasket, the cylindrical portion extending outwardly past the retaining washer and terminating at a shoulder; and

applying a rotary forming tool against the shoulder on the cylindrical portion, such that the portion of the cylindrical portion from the shoulder to the retaining washer is flared radially outwardly so as to form a retaining cap on an outer side of the retaining washer, thereby locking the gasket on the valve holder.

2. A method as in claim 1 wherein the cylindrical portion has a first portion on which the gasket is mounted and an inwardly adjacent portion of lesser diameter on which the retaining washer is mounted, forming a shoulder between the first and second portions against which the retaining washer fits, the forming tool deforming the cylindrical portion on the inner side of the

retaining washer and producing a flared end that holds the retaining ring between the flared end and the shoulder between the first and second portions of the cylindrical portion.

3. A method as in claim 1 wherein the flared end is formed by an orbital riveter.

4. A method as in claim 1 wherein the gas coupling is formed with automatic shutoff valves in each of a male and female coupling components, with each component including a valve holder assembly movably mounted in a valve chamber to open and close the valve, the process including forming the coupling with identical valve holders for the male and female coupling components, such that the valve holders for the male and female couplings are interchangeable.

5. A method as in claim 1 wherein the valve holder includes a stem that is slidably mounted for linear motion in an opening in a guide mounted in the valve chamber, the guide comprising an annular collar having legs around the outer periphery thereof that extend outwardly from the collar to an interior surface of the valve chamber, the guide being formed out of powdered metal.

6. A method of making a valve holder assembly for a shutoff valve incorporated in a pressurized gas coupling wherein male and female coupling components are joined together to connect a source of pressurized gas with a gas operated device, at least one coupling component having a shutoff valve therein, the shutoff valve including a body having an elongated valve chamber therein, with a valve seat at a valve port at one end thereof, a valve member being movably mounted in the valve chamber for movement between a closed position, wherein the valve member engages the valve seat and closes the valve port, and an open position, wherein the valve member is spaced away from the valve seat and the valve port is open, the valve member comprising an

elongated metal valve holder having a compressible gasket mounted thereon in position to engage the valve seat, the method for forming the valve holder assembly comprising:

forming a valve holder in the form of an elongated member having a stem at one end and a nipple at the other end and having an outwardly extending radial flange positioned between the stem and the nipple, the valve holder having a cylindrical portion extending between the flange and nipple, the cylindrical portion and having a diameter greater than the diameter of the nipple but less than the diameter of the flange, the cylindrical portion having a shoulder at an outer end thereof;

providing an annular gasket of suitable compressible material for sealing engagement with the valve seat, the gasket being formed with an outer contour that mates with the contour of the valve seat, the gasket fitting sealingly over the cylindrical portion and having an outer end that abuts the flange, the gasket having an inner end that extends only a portion of the way to the shoulder at the end of the cylindrical portion;

providing a retaining washer that fits over the nipple and abuts the gasket on the cylindrical portion;

fitting the gasket on the cylindrical portion in abutting engagement with the flange;

fitting the retaining ring over the nipple into a position adjacent to the gasket; and

applying a rotary forming tool to the shoulder between the nipple and the cylindrical portion so as to cause the cylindrical portion to be flared radially outwardly so as to form a cap adjacent an outer side of the retaining washer, capturing the retaining washer between the cap and gasket, thereby holding the gasket on the valve holder.

7. A method as in claim 6 wherein the cylindrical portion on the valve holder includes a first portion of relatively enlarged diameter, on which the gasket fits, and a second portion of a lesser diameter on which the retaining washer fits, the first and second portions having a shoulder therebetween that abuts an outer side of the retaining washer when the retaining washer is captured on the valve holder by forming a flared cap on the inner end of the cylindrical portion.

8. A gas coupling having interfitting male and female components, with each component having an automatic shutoff valve biased to a closed position when the coupling is disconnected, each shutoff valve comprising a movable elongated valve holder assembly mounted in an elongated valve chamber having a valve port at an inner end surrounded by an annular valve seat, each valve holder assembly including an elongated valve holder formed of a formable, substantially non-compressible material, the gasket being formed of a compressible material that can form a gas-tight seal on a valve seat, the gasket being annular and being shaped to provide a sealing engagement with the valve seat, the gasket fitting over an inner end of the valve holder and being mounted on a cylindrical portion of the valve holder, with an outer side of the gasket abutting a radial flange on the valve holder, an inner side of the gasket being adjacent to a retaining washer fitted over an inner end of the valve holder, a portion of the valve holder adjacent an inner side of the retaining washer being mechanically deformed radially outwardly sufficiently to form a cap that locks the retaining washer and gasket on the valve holder.

9 A gas coupling as in claim 8 herein the male and female components are formed such that the valve holder assemblies therein are interchangeable.

10. A gas coupling as in claim 8 wherein each valve holder comprises a nipple extending inwardly from the gasket and a stem extending rearwardly from the gasket, the stem being slidably mounted for linear movement in the valve chamber by a guide that is mounted in the valve chamber, the guide having an opening therein that fits over the stem, the guide being formed from powdered metal.

11. A gas coupling as in claim 8 wherein a cylindrical portion having a first portion, on which the gasket is mounted, and a second portion of lesser diameter adjacent the gasket, with a shoulder being formed between the first and second portions, the retaining washer fitting on the second portion and abutting the shoulder between the first and second portions, the retaining washer being captured between said shoulder and the deformed cap.